Zero Retries issue 0108 2023-07-21

Zero Retries is an independent newsletter promoting technological innovation in Amateur Radio, and Amateur Radio as (literally) a license to experiment with and learn about radio technology. Now in its third year of publication.

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Steve Stroh N8GNJ, Editor

Jack Stroh, Late Night Assistant Editor Emeritus

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Web version of this issue - https://www.zeroretries.org/p/zero-retries-0108

Request To Send

Editorial by Steve Stroh N8GNJ

New ARDC President is Bdale Garbee KB0G

Talk about burying the lede… During the ARDC Community Meeting on Saturday 2023-07-15, one of the announcements, perhaps *the major announcement*… was that **Bdale Garbee KB0G is now the President / CEO of ARDC**. Former President / CEO Phil Karn KA9Q is now a Director. Kimberly (KC) Claffy KC6KCC has assumed KB0G's role as ARDC Treasurer. But, ARDC is *inexplicably slow* at updating its website with such important information such as these new positions (at least as of 2023-07-20). Not to mention that the slides from the community meeting aren't available, and there's *still no info* about ARDC's 2nd batch of 2023 grants. But, in any case, congratulations to KB0G, KA9Q, and KC6KCC on their new roles at ARDC.

Neil's Night - Not (for me) in 2023

I'm finishing this issue of Zero Retries on the evening of July 20th, 2023 - the 54th anniversary of humanity's first landing on Luna, and the date I imagined for the inaugural Neil's Night. Unfortunately, this evening finds me away from home and all my Amateur Radio gear that I had hoped to put together in my driveway to receive EME signals. For the past month I've been living in an urban hotel room, in a complex where I can barely see the sky if I look straight up. After dark I hope to at least drive out for a while, find a good viewing spot to at least visually spot Luna, and dream of *Neil's Night 2024*, and a lot of learning experiments in EME communications prior to then. I recently discovered there is a small community of EMErs in Western Washington that I'm going to try to get connected to.

Sometimes, an Article Just Doesn't Work

A funny thing happened this week… "funny" to me anyway. An article that took me more than a day to write won't appear in this issue, or perhaps ever. The reason was that I pinged a trusted advisor about the main thesis of the article, and the advisor offered a sobering counterpoint to my (too optimistic) theme of the article. With that additional perspective, I parked the article in the queue to be revisited sometime in the future. That much "wasted" work doesn't happen too often, but it does happen.

As such things go, the "void" in this week's issue from removing that big story didn't take long to fill. Two innocuous email queries about Zero Retries Interesting topics resulted in stories in this issue - this year's Digital Communications Conference, and the upcoming Production release of new AREDN Firmware.

Kevin Mitnick N6NHG is a Silent Keyboard

And… Kevin Mitnick died this week. You'll undoubtedly read at least one story of *Infamous convicted computer hacker has died*, and I won't rehash *that* part of Mitnick's past. There is a Zero Retries Interesting angle on Mitnick - he was also N6NHG, and I briefly explore the implications of Mitnick's Amateur Radio background.

Zero Retries > 1000 Subscriber Goal

I have a modest goal to get the subscribed reader count for Zero Retries > 1000 by the end of 2023. Please let your co-conspirators in Technological Innovation in Amateur Radio know about Zero Retries and encourage them to subscribe. Zero Retries remains free, as in beer to read and subscribe.

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DCC 2023 May Not Happen

By Steve Stroh N8GNJ

*If there **is** to be a DCC in 2023, a small team needs to step up **to** make it happen, and **fast**.*

Folks like me who really love the annual TAPR Amateur Radio Digital Communications Conference (DCC)1 have started to get worried that there hasn't been any information available about DCC 2023. I reached out to TAPR Vice-President Steven Bible N7HPR and asked directly about DCC 2023.

N7HPR confirmed that at of mid-July, 2023 there are no plans in place for DCC 2023. This results from a combination of burnout of the same crew that have been doing the DCC for years, the retirement of some key people, and the financial hit to TAPR from an uncompromising hotel venue that would not relax pre-COVID commitments. The TAPR leadership team is saturated with trying to keep TAPR's various projects progressing. Most of all, no one / no team, has offered to take over production of the DCC, and there has not been an easy / cooperative venue identified for a DCC in 2023.

If an in-person DCC is to happen in Fall, 2023, a small, well-coordinated team needs to spring into action very quickly. There are some basic requirements:

- Ideally, a venue close to an airport to accommodate out-of-area attendees.
- A conference facility that can accommodate ~50 attendees, plus additional space for tabletop demonstrations.
- Conference facility must have excellent Internet connectivity - *every* DCC attendee brings and uses a laptop or other computer.
- Independent finances to handle up-front costs (hotel deposits, etc.) would be ideal - for example a club with healthy finances.
- Full cost recovery of all expenses from attendee fees or sponsorship.

The alternative to an in-person conference is, of course, a virtual-only DCC, but that's only slightly less challenging:

- A date needs to be decided upon.
- Requests need to go out to potential speakers (Request for Presentations).
- Video systems need to be arranged, especially since the current video crews and equipment probably won't be available.
- Zoom and YouTube accounts need to be set up that are appropriate for a conference.
- Video editors need to be arranged to sequence the pre-recorded presentations.

Traditionally DCC has been held the second or third weekend in September, but that's a convention, not a requirement. In picking a date, here are some conferences to be aware of that (somewhat) overlap with typical DCC attendees:

- GNU Radio Conference - September 5-9, 2023
- QSO Today Academy - September 9-10, 2023
- AMSAT Space Symposium & Annual General Meeting - October 20-21, 2023
- Pacificon - October 20-22, 2023

N7HPR is happy to transfer his DCC domain knowledge to a new DCC 2023 team.

To reiterate, these are hard requirements for a DCC 2023 (in-person or virtual):

- Needs to be a team, not a solo effort or a pair; there's an amazing amount of work that needs to be divided up.
- Needs to happen fast - there's just *barely* enough time for DCC 2023 to coalesce.
- The venue (or the decision to do virtual-only) and date are the most critical detail so that the location can be publicized and attendees can make travel plans.

You can contact TAPR Vice-President Steve Bible N7HPR by email - n7hpr@tapr.org.

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Enhancements and New Devices in AREDN Production Release 3.23.8.0

By Orv Beach W6BI

I've seen a number of notices recently about AREDN release candidate builds that requested testing. Thinking that I just didn't know where to look for the feature set of this upcoming release, I sent a quick email to W6BI. He replied with this ***exclusive early "reveal"*** *of Enhancements and a few new devices in the next Production release of AREDN firmware. I'm honored to have this "scoop" appear in Zero Retries. The AREDN developers have been busy! - Editor*

There have been over 60 nightly releases of the AREDN codebase since the last production release in April 2023. Here are the highlights of the pending production release, expected to be version 3.23.8.0:

Enhancements:

- Added Prometheus Metrics (meant for use with monitoring apps like Grafana).
- SSH and HTTP access to a node via the WAN port can be disabled from the advanced configuration page.
- Improved handling of unsupported hardware.
- Use wifi assoc list when looking for unresponsive nodes.
- Allow MTU on wifi interface to be modified.
- Merge all the station monitoring and mitigation into a single service.
- Support xlinks on x86.
- Support switching mesh radio on multi-radio devices.
- UI improvements.
- Added Advanced Networking tab.
- Virtualized X86 support.
- Added support for group alert messages
- Note devices which support the danger-upgrade process.

New Devices Added:

- New LiteBeam AC Gen2 variant
- Mikrotik LDF 5AC #841
- Mikrotik LDF2 #828
- PowerBeam 5ac-620 support #840

Plus another dozen or so minor enhancements and over two dozen bug fixes.

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What's the Big Deal About VARA FM?

By Steve Stroh N8GNJ

Replying to some great feedback of my perspective on VARA FM.

In Zero Retries 0106, the fifth item of
The Ten Most Zero Retries Interesting Projects - Summer 2023 - Part 1
was
VARA FM / VarAC - Fastest Data Communications Using Voice Radios.

Ben Kuhn KU0HN offered an insightful comment about that section, reprinted in whole:

> As someone who follows and regularly plays with digital protocols both on HF and VHF/UHF, I really struggle to see what the fuss with VARA is all about. Sure, it's a technically excellent protocol, but the modem/software is abysmal and has at times even been user hostile**. The modem software is written in VB6 which was deprecated in favor of VB.NET in 2003. Microsoft has only committed to supporting the VB6 runtime through Windows 11 (but they could extend it at their leisure I suppose. See https://learn.microsoft.com/en-us/previous-versions/visualstudio/visual-basic-6/visual-basic-6-support-policy). This means for an optimal experience a Windows machine is required*.
>
> The dependency on VB6 and the GUI also prevent the modem from starting as a proper service (Yes, you can hack it to run under a VNC X session under Linux/wine). This requires automatic login in order to start the modem automatically on Windows. This is really bad from a security standpoint if the VARA modem is in a shared location (think repeater site.)
>
> Windows tends to be much more maintenance intensive than other OSs, and more power hungry as well. There is also no chance of a hardware TNC being developed which makes filling coverage gaps--which is something I do currently using a KPC-3 for AX.25 packet several times a year for public service events--much more difficult. You can't just hand two boxes to a ham unfamiliar with the setup and say "Hey, plug this in and turn it on." You also are probably going to have to spend a couple hours doing updates/testing before the event. I suppose this is why there are hams experimenting with repeaters for VARA. To me it's just not worth the hassle to use and support a mode that is completely closed--both in protocol and source--and requires that much manual intervention to run.
>
> *Yes, VARA somewhat runs in WINE. Badly in my experience. It seems to work well enough on the client side but on a packet switch/node it just doesn't have the reliability. Sure, there are workarounds (see https://eindhoven.space/2022/07/12/kicktnc-sh-raspberry-pi-vara-hf-tnc-stabilization/) but this totally fails on the KISS principal. All that aside, WINE doesn't run on mobile devices so either a hardware TNC or Android/iOS implementation is never going to happen.
>
> **At least one release of VARA had DRM put in the software that broke WINE compatibility.

Speed… is the *Biggest* Deal with VARA FM

In my opinion, the primary "Big Deal" about VARA FM is that Jose Alberto Nieto Ros EA5HVK figured out how to do reasonably high data speeds, within typical Amateur Radio VHF / UHF 20 kHz channels[2], using readily available (within Amateur Radio) computers, radios, and audio interfaces.

Until VARA FM proved it was possible and practical, *data speeds of 25 kbps on a 20 kHz VHF / UHF channel were considered impractical at best, impossible at worst*.

But EA5HVK didn't just implement a high data speed using carefully chosen equipment… he also figured out how to implement not-quite-so-high speeds using *any* Amateur Radio VHF / UHF radio[3] with *any* audio interface[4]. And he made those two extremes - very low cost equipment, and 25 kbps data rate, compatible and interoperable.

VARA FM is not just fast and interoperable, but robust using Forward Error Correction (FEC), the same technology that makes Digital Voice (DV) modes more reliable than analog voice modes.

That said, all of KU0HN's points *are valid*. And in an apples-to-apples comparison of VARA FM versus Amateur Radio Packet Radio, the latter would win:

- Packet Radio can run on a variety of platforms, including small Linux systems (including Raspberry Pis) that can be configured and used as an appliance, as well as now very reliable and well-understood TNCs such as the KPC-3.
- Packet Radio is Open Source and well-documented, and thus can be readily studied, used, adapted, changed, enhanced etc.
- Reliance on Windows as a platform for a single function has many downsides.
- VARA FM is only available from a single source and requires a fee to be paid for users to make use of the highest available speed.

Packet Radio Versus VARA FM Isn't a Direct Comparison

But, in my opinion, VARA FM versus Amateur Radio Packet Radio *isn't* an apples-to-apples comparison. Despite the points outlined by KU0HN, VARA FM is gaining a lot of users. Here are some of the reasons that I think that is the case:

- VARA FM's speeds of 12 kbps (Slow / Narrow) and 25 kbps (Fast / Wide) make a significant difference in the reliability of data communications over VHF / UHF channels. In addition to the fast transmissions, VARA FM's robustness typically "gets the message through on the first attempt". In comparison, typical speeds for Amateur Radio Packet Radio are 1200 bps, with no FEC, result in long transmissions that often require retries, to complete a typical message transfer.
- VARA FM uses sophisticated techniques to make its transmissions quite robust, including Orthogonal Frequency Division Multiplexing (OFDM), variable modulations (4PSK through 256QAM), Forward Error Correction (FEC), Channel Sounding, and others. While Packet Radio does now have FEC available, it's not widely implemented.

- VARA FM's "Faster" (Wide) mode and the "Slower" (Narrow) mode are completely interoperable and can thus share a channel. Unlike Amateur Radio Packet Radio, where different speed stations (such as 1200 bps ASFSK and 9600 FSK), if operated on the same channel, cannot decode each other's signals and will thus interfere with each other.

A presentation posted online by Bud Semon K7CW - **VARA - A High Speed Data Mode** is pretty instructive about Packet Radio versus VARA FM. A few outtakes:

- ARES/RACES goal is fast, accurate information transfer
  - We started with voice
    - Inaccurate and very slow
  - We moved to packet on VHF and Pactor on HF
    - Accurate and slow
  - Both required complicated hardware between the computer and the radio
  - As computers got faster and software got better, we were able to simplify the interface and move the work to the computer

  …
- Support for VARA is built into Winlink Express

  …
- Very roughly, for very strong signals, VARA FM Narrow is 18 times faster than packet.

Again, despite VARA FM's limitations per KU0HN, it's VARA FM's speed and robustness that is winning converts from Packet Radio to VARA FM, especially those using Packet Radio for Emergency Communications and especially Winlink on VHF / UHF.

Windows…

Yes, Windows can be problematic… and Information Technology (IT) professionals strongly prefer Linux for applications such as data communications over radio. Some prefer Linux so strongly that they have succeeded in running VARA FM on Wine. But, the reality in Amateur Radio is that Windows is *the* operating system that nearly everyone knows how to use. Requiring the use of Windows just isn't a deal-breaker for *most* Amateur Radio Operators.

That said, there *are* some things that can be done to minimize the issues with Windows in applications like VARA FM:

- Treat the Windows device used for VARA FM as a dedicated appliance for VARA FM - either a basic laptop PC or inexpensive surplus PC or even a new small appliance computer (search for "Mini PC" on Amazon). Update it as necessary, and then leave it disconnected from the Internet to minimize the need for irritating updates.
- Run one of the applications such as Windows Decrapifier to remove unneeded cruft, crap, telemetry, etc. from Windows, down to a minimal, more reliable system.
- If a PC is dedicated to VARA FM use, all the fussy audio settings can be "set once and forget" for VARA FM.

Companion Applications Using the VARA API and TCP/IP Sockets

VARA FM is essentially a file transport utility, akin, conceptually to the ubiquitous TCP/IP File Transfer Protocol (FTP)5:

- Choose a file to send,
- Specify where the file is to be sent (receiving station),
- VARA FM transmits the file, fast and reliably.

All other functions are left to companion applications such as:

- **G8BPQ Suite - Multipurpose Packet Radio suite**, including Router / Switch, Chat server, email server, BBS, and TCP/IP stack. Info on connecting G8BPQ to VARA FM.
- **JNOS - Multipurpose Packet Radio suite**, including Router / Switch, BBS, APRS Igate, and TCP/IP stack. Info on connecting JNOS to VARA FM.
- **VARA Chat** - Text and file transfer application.
- **VARA Terminal** - Dumb terminal for accessing a BBS.
- **Winlink Express** - Exchange Winlink email either peer-to-peer or into the worldwide Winlink system via radio or Internet. **WE is *the most-used*, best-documented application for using VARA FM.**

Most significantly, a new companion application for VARA (both HF and FM) has recently emerged - VarAC - "HF / FM Digital Chat Reinvented, for Fun or EmComm". VarAC is written by Irad Deutsch, 4Z1AC and is at version 8+. Some primary features of VarAC:

- Realtime short text message chat
- Email to individuals or groups

- “Broadcast” messages - one to many
- File transfers including images (built-in image compression / resolution reduction)
- Beacons (allows status indications of other stations)

Like VARA FM, VarAC is written for Windows. It seems likely to me (but I have not confirmed) that VarAC can be run on a different computer than VARA FM by specifying appropriate TCP/IP sockets on the VARA FM Windows computer.

Would We Like An Open Source Equivalent to VARA FM?

Yes! Yes, we would like to have an Open Source data communications systems that provides equivalent features (speeds, robustness) to VARA FM.

I discussed this idea at length in Zero Retries 0004 - The VARA FM Problem and The VARA FM Solution.

What could be different with an open source equivalent of VARA FM?

- One of the biggest differences could be that *it is open*, so the source code and underlying algorithms, protocols, etc. could be viewed, studied, modified, forked, ported, etc.
- One interesting idea that’s been floated is implementing some compatibility between VARA FM and Packet Radio, so that VARA FM could be used on the same channel as Packet Radio.
- A big difference would be that it could operate natively on Linux, and thus on inexpensive Linux appliances such as Raspberry Pi.
- It could be made more robust and reliable without dependence on Windows and Windows PCs; for example a hardware + software watchdog timer could be implemented.
- The fee required to use VARA FM at its fastest speeds isn’t a major issue to most VARA FM users… but it is *an* issue. An open source implementation would not require a fee to be paid.

We don’t have an Open Source equivalent of VARA FM because no one, or no group, or no project (such as a graduate student or a class project) has attempted to create a usable system such as EA5HVK has done with VARA FM.

Again, EA5HVK has demonstrated that it’s feasible to stitch together widely available techniques such as OFDM, multiple modulation methods, Forward Error Correction, sender / receiver negotiation, channel sounding, etc. into a *system*. EA5HVK *did the hard work* to implement such as system and make it usable, and no less effort would be required to implement an open source data communications system with features and capabilities equivalent to VARA FM.

The closest open source equivalent to VARA FM that I’m aware of is Mercury - a Configurable Open Source Software Defined Modem6 released by Rhizomatica. Since I last wrote about Mercury in Zero Retries 0076 - Mercury - a Configurable Open Source Software Defined Modem, shortly after Mercury was published on Github, considerable progress *has been made*. Notably (to me), “Gearshift” (negotiates maximum speed for the channel conditions and common speed of the sender and receiver) and an API have been implemented. With the API, potentially an application like VarAC could be written for Mercury, and we would then have the equivalent of an Open Source VARA FM.

I hope someone or some group takes up the challenge to build upon the excellent work being done with Mercury.

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Kevin Mitnick N6NHG is a Silent Keyboard

By Steve Stroh N8GNJ

Undoubtedly much will be written about the death of Kevin Mitnick and that he was one of the most wanted computer criminals in history. But here in Zero Retries, I wanted to highlight a bit of Mitnick’s back story as an Amateur Radio Operator.

A 2002-12-27 story in Wired - Mitnick Granted Ham License is interesting:

> Mitnick applied to renew his ham radio license in 1999, while still in prison. The Federal Communications Commissionordered a hearing, citing that Mitnick at one time was "the most wanted computer criminal in U.S. history."
>
> FCC Administrative Law Judge Richard Sippel granted the license in a ruling made public Monday.
>
> "He started hacking as an inquisitive teenager and wound up a disgraced felon," Sippel wrote. "There is reliable evidence that Mr. Mitnick has focused on becoming an honest, productive citizen."
>
> Mitnick said he was pleased with the decision.
>
> "We put on a good case to show the FCC that I'm sorry for my past actions," he said.
>
> Mitnick, who began using ham radios when he was 13, said it cost him more than $16,000 in legal expenses to convince the FCC to renew his license. Typical renewals are free. "It's the most expensive amateur radio license in the world," Mitnick said.

Renewing his Amateur Radio license couldn’t have done Mitnick *any* conceivable good, even as simple recreation given that he was incarcerated and had to expect severe restrictions on any kind of electronic communications during his parole period. But Mitnick decided to fight, and try to win over a (likely unsympathetic) FCC Administrative Law Judge to renew his Amateur Radio license… apparently because it was simply a point of pride for him - *he*

wanted to continue to use our proud shared boast:

I am an Amateur Radio Operator!

mitnicksecurity.com tells a bit more7 of N6NHG's early exposure to Amateur Radio:

> I used to be already an beginner radio operator. I handed my HAM radio take a look at once I was 13, and I used to be already into electronics and radio so I had that technical background.
>
> This was again within the 70s, and I couldn't get a C.B. license since you needed to be 18 years outdated, and I used to be 11 or 12. So I met this bus driver once I was driving the bus at some point, and this driver launched me to HAM radio. He confirmed me how he might make telephone calls utilizing his handheld radio, which I believed was tremendous cool as a result of it was earlier than cell telephones and I believed "Wow that is so cool, I've to study it." I picked up some books, took some programs, and at 13 handed the examination.
>
> *Then I discovered about telephones*.

My point in bringing up Mitnick's involvement, especially his early involvement, in Amateur Radio is that (as I often try to promote here in Zero Retries) Amateur Radio *can serve as an inspiration to a young person towards a technical career.*

The pessimistic will focus on Mitnick's hacking escapades and the damage he did. But those of us who look at the bigger picture of Mitnick's career can reflect on how much *good* Mitnick did *over the past two decades* defending against computer hacking (now often called cyber warfare). How many cyberattacks were prevented because of Mitnick's work, and the knowledge about cybersecurity and computer system vulnerabilities he imparted via his books? I'll guess, very conservatively, *thousands*.

Mostly, I'd like to think that *Amateur Radio Operator N6NHG* had an excellent understanding of cybersecurity issues relating to radio technology - vulnerabilities, what's possible / feasible to be secure, or not with radio technology, etc. That specialized knowledge was made possible, in part, *because Mitnick was an Amateur Radio Operator*. We're not just safer because N6NHG chose to be one of the good folks (white hats), but that he was one of the good folks *that understood radio technology from its fundamentals* - because of his involvement in Amateur Radio.

Thank you N6NHG for making a unique dent in the universe, and Amateur Radio.

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Zero Retries Interesting Videos

By Steve Stroh N8GNJ

These are a few recent videos that I think are Zero Retries Interesting.

ARDC Community Meeting 2023-07-15

ARDC 2023-07-15 Community Meeting (Vimeo)

Ria Jairam N2RJ Interviews Wojciech Kaczmarski SP5WWP of M17 Project

N2RJ does a good job in this interview of SP5WWP at while they were both attending HAM RADIO (Friedrichshafen) in June. N2RJ even teased out the (previously) mysterious origin of "M17" .

RADIOBERRY HF SDR TRANSCEIVER PI HAT - IT'S BACK!

Mount Baker Amateur Radio Club Digital Group 2023-07 Meeting

The MBARC Digital Group (DG), based in Bellingham, Washington (of which I am now President, a few months early) always finds plenty to talk about. Budd Churchward WB7FHC always does a great job of video editing. Check out WB7FHC's YouTube channel for previous DG meetings and related videos.

ZR > BEACON

By Steve Stroh N8GNJ

Short mentions of Zero Retries Interesting items.

TAPR GUS GNSS Antenna Splitter

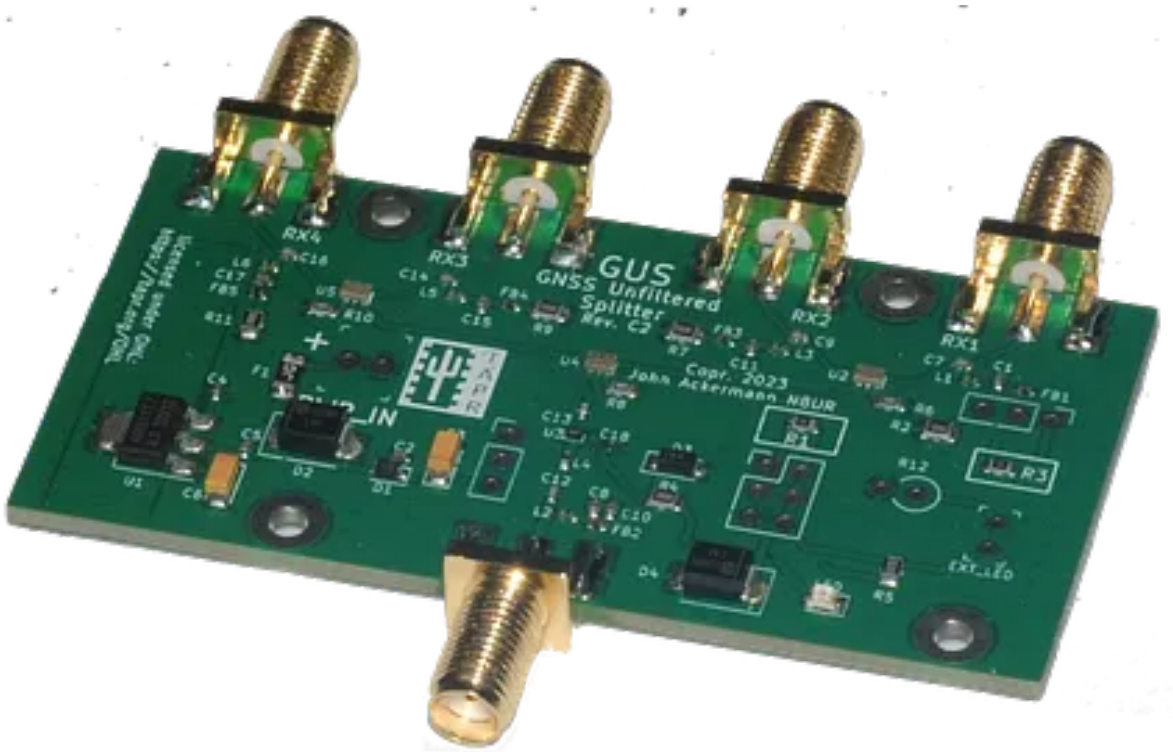


Image courtesy of TAPR

The GUS (GNSS Unfiltered Splitter) is a four port coupler that allows multiple GNSS (GPS) receivers to be fed from one antenna. Unlike most available GNSS splitters, the GUS does not have bandpass filters. This allows it to be used on all of the GNSS frequency bands — L1, L2, and L5. In fact, it operates from under 1000 to over 1700 MHz. The GUS has a low noise amplifier that compensates for losses in the splitter, and gives a net gain of about 8 dB.

GNSS is **G**lobal **N**avigation **S**atellite **S**ystem, which is a more appropriate name now that the US Department of Defense's Global Positioning System (GPS) is just one of several satellite navigation systems available for use.

Ria Jairam N2RJ Interviews Wojciech Kaczmarski SP5WWP of M17 Project

N2RJ does a good job in this interview of SP5WWP at while they were both attending HAM RADIO (Friedrichshafen) in June. N2RJ even teased out the (previously) mysterious origin of "M17" .

LILYGO T-TWR Plus Handheld Radio Experiment Platform

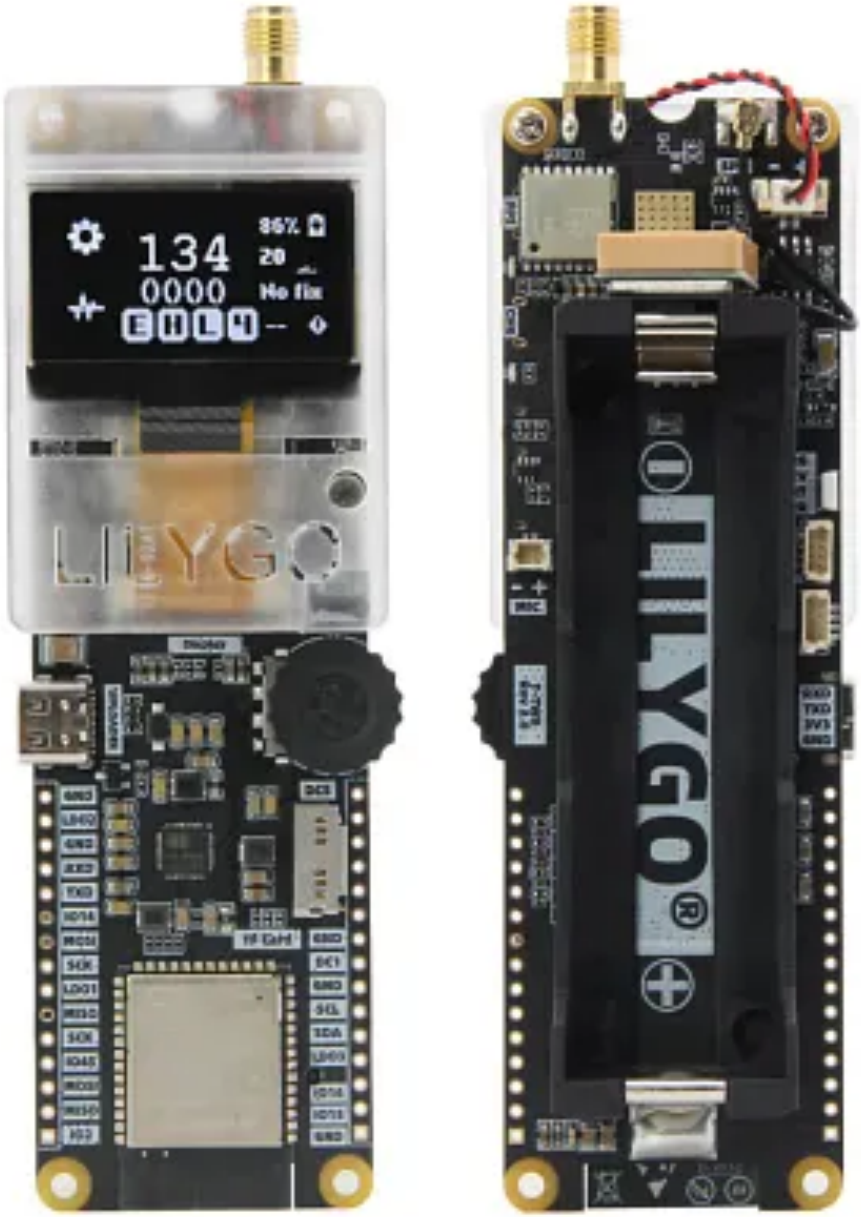


Image courtesy of LILLYGO

> T-TWR Plus is the ultimate development board for ambitious tech-enthusiasts. With integrated Wi-Fi and Bluetooth, and a SA868 Wireless Transceiver, this board can achieve Walkie-Talkie functionality. It also includes an OLED Display and GPS for precise location tracking.

I only became aware of this from a Mastodon posting from OpenRTX:

> This platform will be able to modulate arbitrary digital protocols, including M17 without hardware mods!

This unit is *$52* direct from the vendor. The form factor of these units is roughly that of a portable radio. The back side has a battery holder for an 18650 battery. The page includes a note about frequency ranges of various models:

- **VHF** - 134 - 174 MHz
- **350** - 320 - 400 MHz
- **UHF** - 400 - 480 MHz

Just… amazing… integration of radio (and computer) technology in a small, inexpensive form factor.

[Jann Traschewski DG8NGN Wins Horkheimer Prize For His Work With Hamnet]

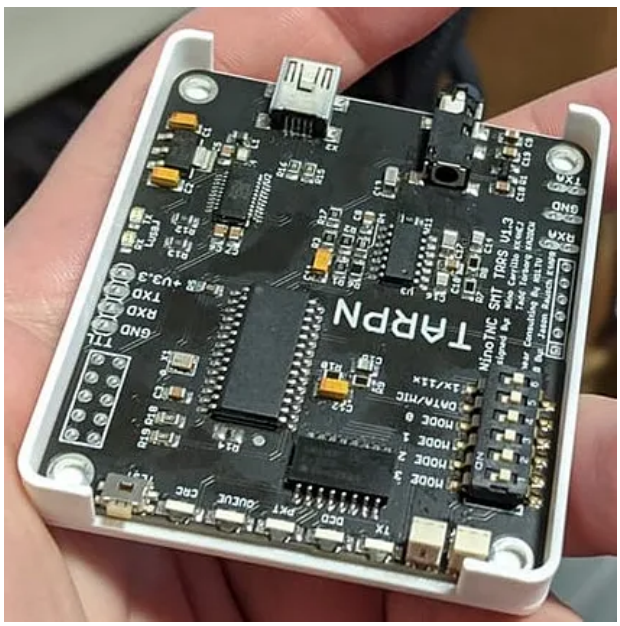
This was reported by Ria Jairam N2RJ in her newsletter:

> Jann Traschewski, DG8NGN is the 2023 recipient of the Horkheimer Prize from the Deutscher Amateur Radio Club (DARC) for his work with Hamnet. The prize was awarded at Ham Radio Friedrichshafen in June, 2023. Hamnet is a high speed data network in Germany and other parts of Europe. It uses modified commercial gear and IP addresses from ARDC's 44-Net IP address allocation for data communication among radio amateurs. Jann was presented with a trophy and a cheque for 2500 € from DARC.
>
> You can see the announcement from DARC here: (German|translated to English).

My heartiest congratulations to DG8NGN for this honor! He works very hard to support Hamnet and expand it, partially enabled by an ARDC Grant in 2021. DG8NGN was also a member of the ARDC Technological Advisory (TAC) Committee in 2021, and is now an ARDC Community Ambassador.

Like QO-100, Hamnet is an inspiration for what can be done in Amateur Radio in providing communications services via Amateur Radio using *21st century technologies*.

Possible Low Profile Version of RPC Electronics NinoTNC



Jason Rausch K4APR on the Facebook group **Packet radio systems and information**:

> I have a slightly special version I designed for myself, but I might make it available, too. Basically a thin, low-profile version using USB-C and a TRRS jack for the radio.

The original version includes full size USB Type B connector and a 6-pin MiniDIN "data" jack. There will also be designs for a 3D printed case, and perhaps cases will also be available for sale. When asked about availability of the original version, K4APR replied:

> Not available just yet. We're about a month out.

When it is available, it will be sold through K4APR's company RPC Electronics.

Proof of Concept Demonstration of Data / HD Video System for International Space Station

Pseudostaffer Jeff Davis KE9V keeps spotting some real gems that I completely miss. I really love KE9V's deadpan delivery of this Zero Retries Interesting news, reporting out a request for reimbursement for an out-of-pocket expenditure of £90.00.

> Discussions are underway in the ARISS (Amateur Radio on the International Space Station) Community on a multi-use digital communications system for the next generation of ARISS equipment. The opportunity arose at short notice to provide a proof-of-concept demonstration to an International ARISS meeting held in the Netherlands on 17/18 April 2023 to show that such a system could carry both data and HD video using techniques developed by BATC members over the last 5 years.

The major components of the system that successfully demonstrated the concept?

- Metal Box
- Raspberry Pi 4
- LimeSDR Mini

- Software written by Philip Krump M0DNY
- And a few, as they say in the UK, bits and bobs.

Yet another example of technological innovation occurring now in Amateur Radio!

Moonlighter Now in (Independent) Orbit

As discussed in Zero Retries 0105, the Moonlighter satellite is now in *independent* orbit8. I didn't previously spot that the Hack-A-Sat has its own website. Countdown is 20 days till the hacking commences. We live in interesting times!

Leave a comment

Share

Join the *Fun* on Amateur Radio

If you're not yet licensed as an Amateur Radio Operator, and would like to join the fun by *literally having a license to experiment with radio technology*, check out
Join the Fun on Amateur Radio for some pointers.

Zero Retries Frequently Asked Questions (FAQs) — In development 2023-02.

Closing the Channel

In its mission to highlight technological innovation in Amateur Radio, promote Amateur Radio to techies as a literal license to experiment with radio technology, and make Amateur Radio more relevant to society in the 2020s and beyond, Zero Retries is published via email and web, and is available to everyone at no cost. Zero Retries is proud *not to participate* in the Amateur Radio Publishing Industrial Complex, which hides Amateur Radio content behind paywalls.

My ongoing ***Thanks*** to:

- Tina Stroh KD7WSF for, well, *everything!*
- **Founding Members who generously support Zero Retries financially:**
  Founding Member 0000 - Steven Davidson K3FZT
  Founding Member 0001 - Chris Osburn KD7DVD
  Founding Member 0002 - Don Rotolo N2IRZ
- Numerous Annual and Monthly subscribers who also generously support Zero Retries financially!

Want to Support Zero Retries?

- The *most* effective way to support Zero Retries is to simply mention Zero Retries to your co-conspirators that are also interested in knowing more about technological innovation that is occurring in Amateur Radio and encourage them to become a fellow subscriber.
- One particularly effective method of promoting Zero Retries is to add a mention of Zero Retries to your QRZ page (or other web presence) and include a link:

  https://www.zeroretries.org
- If you'd like to financially support Zero Retries, that is *greatly* appreciated and helps offset expenses incurred in publishing Zero Retries. Paid subscriptions for Zero Retries are *entirely optional*, as explained in this special issue of ZR:
  Zero Retries Administrivia - Activating Payment Options.

These blogs and newsletters regularly feature Zero Retries Interesting content:

- Dan Romanchik KB6NU mentions "Zero Retries Interesting" topics so regularly on his blog (that I otherwise wouldn't know about) that I've bestowed on him the honorific of Pseudostaffer.
- Jeff Davis KE9V also mentions "Zero Retries Interesting" topics so regularly on his blog (that I otherwise wouldn't know about) that I've bestowed on him the honorific of Pseudostaffer.
- Amateur Radio Weekly by Cale Mooth K4HCK is a weekly anthology of links to interesting Amateur Radio stories.
- Experimental Radio News by Bennet Z. Kobb AK4AV discusses (in detail) Experimental (Part 5) licenses issued by the US FCC.
- TAPR Packet Status Register has been published continuously since 1982.
- Other Substack Amateur Radio newsletters recommended by Zero Retries.

These YouTube channels regularly feature Zero Retries Interesting content:

- HB9BLA Wireless by Andreas Spiess HB9BLA

- KM6LYW Radio by Craig Lamparter KM6LYW (home of the DigiPi project)
- Modern Ham by Billy Penley KN4MKB
- Tech Minds by Matthew Miller M0DQW

The Substack email publishing platform makes Zero Retries possible. I recommend it for publishing newsletters.

If you're reading this issue on the web and you'd like to see Zero Retries in your email Inbox every Friday afternoon, just click below to join ~~100~~ ~~200~~ ~~300~~ ~~400~~ *500* ~~600~~ ~~700~~ *800+* other readers:

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Leave a comment

If you're a fellow smart person that uses **RSS**, there *is* an **RSS feed for Zero Retries**.

Zero Retries (N8GNJ) is on Mastodon — n8gnj@mastodon.radio — just click:

Zero Retries / N8GNJ on Mastodon

Email issues of Zero Retries are "instrumented" by Substack to gather basic statistics about opens, clicking links, etc.

More bits from Steve Stroh N8GNJ:

- SuperPacket blog — *Discussing new generations of Amateur Radio Data Communications — beyond Packet Radio (a precursor to Zero Retries)*
- N8GNJ blog — *Amateur Radio Station N8GNJ and the mad science experiments at N8GNJ Labs — Bellingham, Washington, USA*

Thanks for reading!
Steve Stroh N8GNJ / WRPS598 (He / Him / His)
These bits were handcrafted (by a mere human, not an Artificial Intelligence bot) in beautiful Bellingham (The City of Subdued Excitement), Washington, USA.

2023-07-21

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Blanket permission granted for TAPR to use any Steve Stroh content for the TAPR Packet Status Register (PSR) newsletter (I *owe* them from *way* back).

1

Personal circumstances conspire *perfectly* to make it infeasible for me to be involved in a DCC 2023 effort. I'm not just claiming "I'm too busy", literally there are two *very big events in my life* that cannot be postponed or worked around to enable me to help with DCC 2023.

2

While higher speed data communications *have* been implemented in Amateur Radio, the WA4DSY 56k Modem (56 kbps), D-Star Digital Data (DD) mode (128 kbps), and New Packet Radio (500 kbps) all require a *100 kHz channel* to achieve those speeds. And, the WA4DSY 56k modem required a 28 MHz input transverter, DD mode has only been implemented in radios operating in 1240-1300 MHz, and New Packet Radio only operates on 430-450 MHz at low power.

3

Using the speaker and microphone connections.

4

Even as simple as a modified $5 USB audio interface.

5

It's understood that no one (but Amateur Radio users) would dare run FTP these days on the Internet given FTP's lack of encryption for username and passwords. But using FTP is a more exact comparison to VARA FM specifically because VARA FM *and* FTP *don't* use encryption.

6

I was told by the developers (see the ZR 0076 story) that although their focus for Mercury was use on HF, there was nothing in its architecture that would prevent it from being used on the wider channels and corresponding higher speeds on VHF / UHF.

7

This is copied verbatim from the website, garbled syntax and all.

8

It was previously in orbit, “flying in close formation” aboard the International Space Station, prior to its launch as an independent satellite.